

Date: Wednesday, 11/03/2009 11:27:46 AM  
User: Linda Lacelle


# Process Sheet

<b>Customer</b> : CU-DAR001 Dart Helicopters Services <b>Job Number</b> : 46280 <b>Estimate Number</b> : 12436 <b>P.O. Number</b> : <b>This Issue</b> : 11/03/2009 <b>S.O. No.</b> : <b>Prsht Rev.</b> : NC <b>First Issue</b> : 03/03/2009 <b>Type</b> : SMALL /MED FAB <b>Previous Run</b> : 45566  <b>Written By</b> : _____ <b>Checked &amp; Approved By</b> : _____ <b>Comment</b> : EST rev. A 05.06.06 preliminary EC est B 07.04.09 revA dwg EC	<b>Drawing Name</b> : BASKET (A119) STRUT  <b>Part Number</b> : D35171 <b>Drawing Number</b> : D3517 REV.A <b>Project Number</b> : N/A <b>Drawing Revision</b> : A <b>Material</b> : <b>Due Date</b> : 16/03/2009 <b>Qty:</b> 10 <b>Um:</b> Each
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**Additional Product**

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Job Number: 

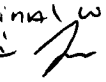
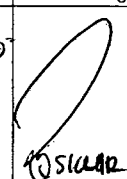

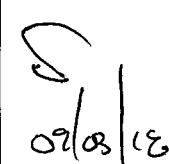
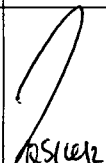
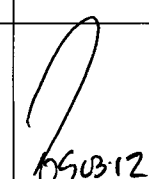
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Seq. #:	Machine Or Operation:	Description :
1.0	M6061T6B0750X06000	6061-T6 Bar .750 x 6.00
		
Comment: Qty.: 0.5906 f(s)/Unit    Total : 5.9063 f(s) 6061-T6 Bar .750 x 6.00 Batch: <u>110912</u> <span style="float: right; margin-right: 50px;"><i>ml 09 03 17</i></span> <span style="float: right;"><i>(10)</i></span>		
2.0	WATER JET	FLOW WATER JET
		
Comment: FLOW WATER JET 1-Cut as per Dwg D3517 Dwg Rev: <u>A</u> Prog Rev: <u>A</u>  2-Open holes to finish size as per Dwg D3517  3-Deburr if necessary <span style="float: right; margin-right: 50px;"><i>ml 09 03 18</i></span> <span style="float: right;"><i>(10)</i></span>		
3.0	QC2	INSPECT PARTS AS THEY COME OFF MACHINE
		
Comment: INSPECT PARTS AS THEY COME OFF MACHINE <span style="float: right; margin-right: 50px;"><i>ml 09 03 10</i></span> <span style="float: right;"><i>(10)</i></span>		
4.0	QC8	SECOND CHECK
		
Comment: SECOND CHECK <span style="float: right; margin-right: 50px;"><i>Soe/03/10</i></span> <span style="float: right;"><i>(10)</i></span>		
5.0	HAND FINISHING1	HAND FINISHING RESOURCE #1
		
Comment: HAND FINISHING RESOURCE #1 Chemical Conversion Coat as per QSI 005 4.1 <span style="float: right; margin-right: 50px;"><i>umy/fl</i></span> <span style="float: right;"><i>09/03/18</i></span>		

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D3517-1 PAR #: N/A Fault Category: Prod / ~~fine~~assy med ~~small~~ NCR: Yes No DQA: D Date: 09/03/26  
 Resolution: Scrap Disposition: Scrap QA: N/C Closed: D Date: 09/03/26

NCR: 46280		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
090312	20	All 10 parts are scrap. Ø0.257 is at max Ø0.270 due to the hole taper from the water jet. Thick mat'l  R.C: Program/process.  P.S: This is a duplicate Q.C. lost the original W/O, but kept the e-mail 	 090312	reduce the hole size on the program, to have the holes opened to size manually. scrap; destroy qty 10 & replace.	 090818	 09/08/18	 09/08/18	 090312

NOTE: Date & initial all entries

Date: Wednesday, 11/03/2009 11:27:47 AM  
User: Linda Lacelle

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: BASKET (A119) STRUT

Job Number: 46280

Part Number: D35171

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

POWDER COATING

POWDER COATING



*m110939*



Comment: POWDER COATING

Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3

START TIME:

*13:45*

OVEN TEMPERATURE:

*320°*

FINISH TIME:

*14:15*

*UMD / FL*

*09/03/23*

*(X10)*

7.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

*BR 09-03-23*

*(10)*

8.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: \_\_\_\_\_

*ST 509*

*SS 09/03/24*

*(16)*

9.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

*09/03/24*

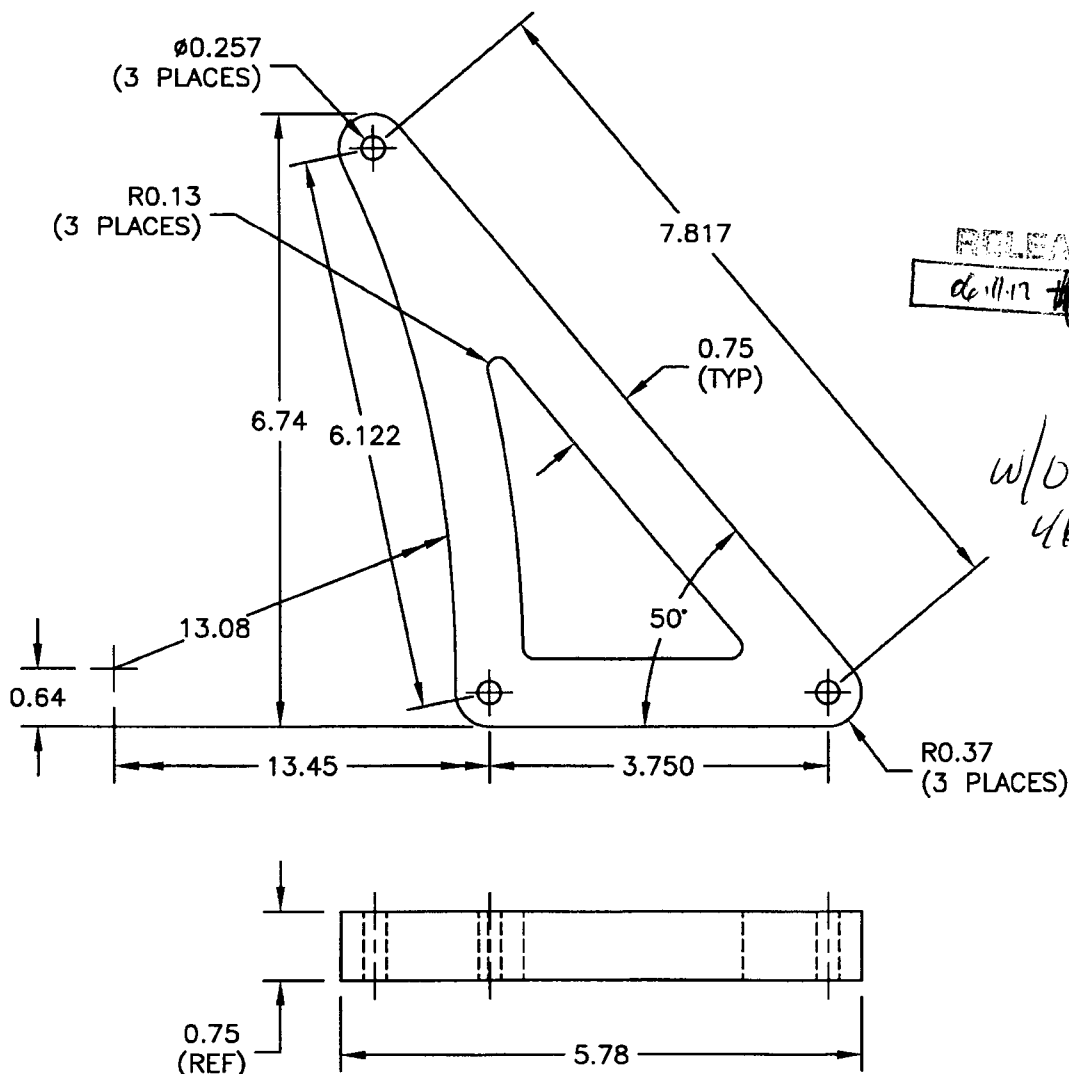
Job Completion



*MMF 09-03-24*



DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO. D3517	REV. A SHEET 1 OF 1
DATE 06.06.07		TITLE BASKET (A119) STRUT	SCALE 1:2
A	06.06.07	NEW ISSUE	



**D3517-1 STRUT**

- 1) MATERIAL: M6061-T6 (OR 6061-T651/T6510/T6511/T6512/T62) ALUMINUM BAR  
PER AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116) OR  
PER AMS-QQ-A-200/8 (OR AMS 4160)  
(REF DART MATERIAL SPEC M6061T6B0.750X00.750)
- 2) FINISH: ACID ETCH AND ALODINE PER DART QSI 005 4.1  
POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3
- 3) IDENTIFY WITH DART P/N D3517-1 USING FINE POINT PERMANENT INK MARKER
- 4) ALL DIMENSIONS ARE IN INCHES
- 5) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 6) BREAK SHARP EDGES 0.005 TO 0.010 MAX

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Date: Wednesday, 11/03/2009 11:27:23 AM

User: Linda Lacelle

**JOB HISTORY : DETAIL**

<b>Job Number</b>	: 46280	<b>Customer</b>	: Dart Helicopters Services LLC.				
<b>Estimate Number</b>	: 12436	<b>DWG Name</b>	: BASKET (A119) STRUT				
<b>Purchase Order #</b>	:	<b>Part Number</b>	: D35171				
<b>Complete Date</b>	: / / : : AM	<b>DWG Number</b>	: D3517 REV.A			<b>Rev.</b>	: A

<b>DUE DATE</b>	<b>ORDERED</b>	<b>DELIVERED</b>
16/03/2009	10	0

<b>1.0</b>	<b>M6061T6B0750X06000-6061-T6 Bar .750 x 6.00</b>	<b>INVENTOR</b>
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DATE	EMPLOYEE	TYPE	Qty		COST	
06/03/2009	MURD02: Murdoch, Matthew	M6061T6B0750X06000	5.906		\$67.92	Lot # 110912 Qty. 6

<b>Subtotal:</b>	QTD:	0	CTD:	6	\$67.92
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<b>2.0</b>	<b>WATER JET</b>	<b>Internal Operation</b>
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DATE	EMPLOYEE	TYPE	Qty	Time(hrs)	COST	MTime(hrs)	Mach. Cost
06/03/2009	MURD02: Murdoch, Matthew	Run	10.000	3.32	\$53.65	3.33	130.76

<b>Subtotal:</b>	QTD:	10	CTD:	0	3.32	\$184.41
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		TIME	COST
	Machine Time:	3.33	\$130.76
	Labor:	3.32	\$53.65
	Sub-contract (external Op.):		\$0.00
	INVENTORY ITEM:		\$67.92
	SUB-COMPONENT (SUB-JOB):		\$0.00
<b>Total:</b>			\$252.33

<b>COST PER UNIT:</b>	\$252.33
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REFERENCE ONLY

**L Lacelle**

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**From:** Marc Bellavance [mbellavance@dartaero.com]  
**Sent:** March 10, 2009 10:20 AM  
**To:** 'Jason Murdoch'  
**Cc:** 'Mike Petsche'; 'L Lacelle'  
**Subject:** RE: NCR on D3517 B46280

Hey Jason,

The holes in the D3517-1 Strut must be  $\varnothing 0.257'' +0.006''/-0.001''$ .

Since the Strut will be subjected to a considerable load, hole elongation might become a factor on an installation point of view.

Therefore, it is not acceptable to have holes larger than  $\varnothing 0.263''$ , maximum allowable for a close fit on the bolts.

As for inserting a bushing, although I like the idea, the method is not acceptable as it will create problems on a paperwork point of view and it would not be a cost effective solution as the following documents will be affected: create DSI to amend IIN and ICA, record deviation on W/O, update MDL and DR...

I recommend that we scrap the parts. It would be great if the holes could be pierced on the waterjet to a greater tapered diameter that would be smaller than  $\varnothing 0.257''$ .

The holes could then be opened up to  $\varnothing 0.257'' +0.006''/-0.001''$ . Hope it makes sense.

**Marc Bellavance**  
**Mechanical Designer/Technical Support**

***DART aerospace Ltd.***

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**From:** Jason Murdoch [mailto:jmurdoch@dartaero.com]  
**Sent:** March 10, 2009 9:52 AM  
**To:** 'Marc Bellavance'  
**Cc:** 'Mike Petsche'; 'L Lacelle'  
**Subject:** NCR on D3517 B46280

Hi Marcus Maximus,

The 0.257 holes were oversized to 0.270" OD. This is because the material is too thick, and it oversized on the taper. Any chance that these could be acceptable?

Or even drill open the hole and insert a 6061 tube bushing to bring them back to nominal....just an idea  
Qty 10 parts affected.

Jason Murdoch

**Qc. Coordinator**  
jmurdoch@dartaero.com

10/03/2009